ABSTRACT

Disclosed is a method for generating (2^k-2^t) first order Reed-Muller codes from 2^k first order Reed-Muller codes based on k input information bits. The method comprises selecting t linearly independent k^{th} order vectors; generating 2^t linear combinations by linearly combining the t selected vectors; calculating 2^t puncturing positions corresponding to the 2^t linear combinations; selecting one k×k matrix out of a plurality of k×k matrixes having k×k inverse matrixes; calculating 2^t new puncturing positions by multiplying each of the 2^t puncturing positions by the selected k×k matrix; and generating (2^k-2^t) first order Reed-Muller codes by puncturing the 2^t new puncturing positions from the 2^k first order Reed-Muller codes.